Abstract

Disclosed is a linear coil actuator having field sub-assemblies, and a coil assembly, in which the field sub-assemblies each have a field blank, and at least one of the field sub-assemblies also includes groups of magnets. Each group of magnets employs magnets having the same or different sizes and arranged to provide a magnetic polarity and a magnetic flux density distribution in the air gap in correspondence to specified load characteristics, such as a spring having a spring constant K. The field sub-assemblies are positioned with respect to one another to form a gap between the field assembly which includes the magnets, and another of the field assemblies, and the coil assembly is moveable in the gap.